Please replace paragraph [0033] with the following paragraph:

[0033] The concepts of the various embodiments of the branch-free methodologies described above are also applicable to other transcendental functions. One example is the computation of the function exp (X) - 1 over a small range around its root, 0. In that case, an exemplary set of table values would correspond to exp ($j \log 2/2^m$) for some m. The reduced argument of the approximate function in this case would have the form $X - (j \log 2)/2^m$.

Respectfully submitted,

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CERTIFICATE OF MAILING:
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on September 26, 2001.

Jean Svoboda

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Paragraph **[0023]** has been amended as follows:

[0023] To insure highest precision in approximating the function of X, the occurrence of roundoff errors should be minimized as much as possible. This may be accomplished by splitting each term of the approximate function into a pair of working-precision components whose sum is the value of that term. For the general base logarithm example given above, the value of $\log_b (2)$ is stored as a pair of working-precision numbers L_{hi} and L_{lo}, and the values of $\log_b (1/B_j)$ are stored in pairs of $T_{j,hi}$ and $T_{j,lo}$. For the example given here, precision is improved if $k\ L_{hi} + T_{j,hi}$ is representable exactly, that is without any roundoff errors, for all valid values of k and j. Consistent with $B_j = 0$, precision is also improved if $T_{0,hi} = T_{0,lo} = 0$. Also, consistent with $B_N = 1/2$, precision is further improved if $T_{N,hi} = L_{hi}$ and [$TN_{,lo} = L_{lo}$]$\underline{T_{N,lo} = L_{lo}}$. Finally, there can be a further improvement in precision if C, which approximates $\log_b e$, is represented so that $Z = C\ (YB_j-1)$ is computed without roundoff error when $j = 0$ or $j = N$.

Paragraph **[0031]** has been amended as follows:

[0031] Table Value Calculations: The leading parts of the table values are all obtained by rounding the ideal values to a precision such that the least significant bit is 2^{-43}. Hence, [$L_{hi} = \log_e 2$]$\underline{L_{hi} = \log_{10} 2}$ rounded to lsb at 2^{-43}, and [$T_{j,hi} = \log_b$]$\underline{T_{j,hi} = \log_{10}}$ $(1/B_j)$ is similarly rounded. The trailing parts are simply the working-precision approximation of the differences between the ideal values and the leading values. Hence [$L_{lo} = \log_e 2 - L_{hi}$]$L_{lo} = \log_{10} 2 - L_{hi}$ rounded to 53 significant bits, and [$T_{j,lo} = \log_e$]$T_{j,lo} = \log_{10} (1/B_j) - T_{j,hi}$ rounded to 53 significant bits.

Paragraph **[0033]** has been amended as follows:

[0033] The concepts of the various embodiments of the branch-free methodologies described above are also applicable to other transcendental functions. One example is the computation of the function exp (X) - 1 over a small range around its root, 0. In that case, an exemplary set of table values would correspond to [exp ($j/2^m$)]exp (j log2/2^m) for some m. The reduced argument of the approximate function in this case would have the form X - (j log2)/2^m.